PR-6. DIAZINE CHROMOPHORES: STRUCTURE-PROPERTY RELATIONSHIPS, APPLICATIONS AS FLUORESCENT SENSORS, WHITE LIGHT EMISSION AND NONLINEAR OPTICS

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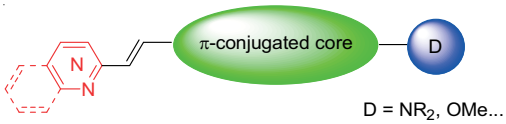
Since the beginning of the 2000's, there has been a great interest in the photophysical properties of diazine chromophores [1]. Diazines are six-membered aromatic heterocycles with two nitrogen atoms. Depending of the position of the nitrogen atoms, the pyridazine (1,2-diazine), the pyrimidine (1,3-diazine) and the pyrazine (1,4-diazine) can be distinguished. Due to the significant π-deficient character of diazine rings, diazinyl fragments can be used as electron-withdrawing group in push-pull structures in which intramolecular charge transfer (ICT) process occurs. π-conjugated diazine derivatives, especially when substituted by electron-donating group such as amino group, generally exhibit intense fluorescence properties with strong emission solvatochromism [2].



The main applications of diazine fluorophores include sensing (polarity, pH, metal cations, nitroaromatic explosives, biological materials....), two photon excitation biological imaging and organic light emitting diodes.

Emission properties of diazine chromophores can be easily tuned by structural modification regarding the diazine fragment itself, the π-conjugated bridge and the electron-donating group [1, 3].

During the last decade, our group has described the synthesis of more than 200 diazine chromophores enabling to highlight structure-property relationships on the photophysical properties of this class of chromophores. The nonlinear optical (NLO) properties [4] (frequency doubling and two-photon absorption) and application for white light emission [5] of our designed diazine chromophores will be also highlighted.

References

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